



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁶ : A61K 38/00, 39/40, 39/42, 39/38, 39/21, 39/12, 39/395, C07H 21/02, 21/04, C07K 1/00, 16/00, C12P 21/06, C12N 7/04	A1	(11) International Publication Number: WO 99/13896 (43) International Publication Date: 25 March 1999 (25.03.99)
(21) International Application Number: PCT/US98/19478 (22) International Filing Date: 18 September 1998 (18.09.98) (30) Priority Data: 60/059,283 18 September 1997 (18.09.97) US 60/060,172 26 September 1997 (26.09.97) US (71) Applicant (for all designated States except US): THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA [US/US]; Suite 300, 3700 Market Street, Philadelphia, PA 19104 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): AYYAVOO, Velpandi [IN/US]; 120 Joanna Road, Havertown, PA 19083 (US). NAGASHUNMUGAM, Thanadavarayan [IN/US]; 120 Joanna Road, Havertown, PA 19083 (US). WEINER, David, B. [US/US]; 717 Beacom Lane, Merion Station, PA 19066 (US). (74) Agents: ELDERKIN, Dianne, B. et al.; Woodcock Washburn Kurtz Mackiewicz & Norris LLP, 46th floor, One Liberty Place, Philadelphia, PA 19103 (US).		(81) Designated States: AU, CA, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: ATTENUATED VIF DNA IMMUNIZATION CASSETTES FOR GENETIC VACCINES (57) Abstract The present invention is directed to nucleic acid molecules encoding attenuated, non-functional virion infectivity factor (<i>vif</i>) proteins. The nucleic acid molecules of the invention are inserted into recombinant expression vectors and administered to mammals in order to induce a cellular and humoral immune response to the encoded protein product.		